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COPY

OF

LETTERS PATENT.

GRANTED TO

W. T. G. MORTON, M. D.,

FOR THE DISCOVERY OF ETHERIZATION,

TOGETHER WITH THE SPECIFICATION ON WHICH THE PATENT ISSUED.

WASHINGTON:
GEO. S. GIDEON, PRINTER.
1854.

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1854

THE UNITED STATES OF AMERICA:

To all to whom these Letters Patent shall come:

Whereas CHARLES T. JACKSON and WILLIAM T. G. MORTON, Boston, Massachusetts, have alleged that they have invented a new and useful improvement in surgical operations, (the said Jackson having assigned his right, title, and interest in said improvement to the aforesaid Wm. T. G. Morton,) which they state has not been known or used before their application; have made oath that they are citizens of the United States, that they do verily believe that they are the original and first inventors or discoverers of the said improvement, and that the same hath not, to the best of their knowledge and belief, been previously known or used; have paid into the treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said WILLIAM T. G. MORTON, his heirs, administrators, or assigns, for the term of fourteen years from the twelfth day of November, one thousand eight hundred and forty-six, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Jackson and Morton, in the schedule hereunto annexed, and is made a part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand at the city of Washington, this twelfth day of November, in the year of our Lord one thousand eight hundred and forty-six, and of the independence of the United States of America the seventy-first.

JAMES BUCHANAN,
Secretary of State.

EDMUND BURKE,
Commissioner of Patents.

[Countersigned and sealed with
the seal of the Patent Office.]

The Schedule referred to in these Letters Patent, and making part of the same.

To all persons to whom these presents shall come:

Be it known that we, Charles T. Jackson and William T. G. Morton, of Boston, in the county of Suffolk, and State of Massachusetts, have invented or discovered a new and useful improvement in surgical operations on animals, whereby we are enabled to accomplish many

if not all operations such as are usually attended with more or less pain and suffering, without any or with very little pain to or muscular action of persons who undergo the same; and we do hereby declare that the following is a full and exact description of our said invention or discovery.

It is well known to chemists that when alcohol is submitted to distillation with certain acids, peculiar compounds, termed *ethers*, are formed; each of which is usually distinguished by the name of the acid employed in its preparation. It has also been known that the vapors of some, if not all, of these chemical distillations, particularly those of sulphuric ether, when breathed or introduced into the lungs of an animal, have produced a peculiar effect on its nervous system; one which has been supposed to be analogous to what is usually termed intoxication.

It has never (to our knowledge) been known until our discovery, that the inhalation of such vapors (particularly those of sulphuric ether) would produce insensibility to pain, or such a state of quiet of nervous action as to render a person or animal incapable to a great extent, if not entirely, of experiencing pain while under the action of the knife, or other instrument of operation of a surgeon calculated to produce pain. This is our discovery, and the combining it with, or applying it to, any operation of surgery, for the purpose of alleviating animal suffering, as well as of enabling a surgeon to conduct his operation with little or no struggling or muscular action of the patient, and with more certainty of success, constitutes our invention. The nervous quiet and insensibility to pain produced on a person is generally of short duration; the degree or extent of it, or time which it lasts, depends on the amount of ethereal vapor received into the system, and the constitutional character of the person to whom it is administered. Practice will soon acquaint an experienced surgeon with the amount of etheric vapor to be administered to persons for the accomplishment of the surgical operation or operations required in their respective cases. For the extraction of a tooth, the individual may be thrown into the insensible state, generally speaking, only a few minutes. For the removal of a tumor, or the performance of the amputation of a limb, it is necessary to regulate the amount of vapor inhaled to the time required to complete the operation. Various modes may be adopted for conveying the etheric vapor into the lungs. A very simple one is to saturate a piece of cloth or sponge with sulphuric ether, and place it to the nostrils or mouth, so that the person may inhale the vapors. A more effective one is to take a glass or other proper vessel like a common bottle or flask. Place in it a sponge saturated with sulphuric ether. Let there be a hole made through the side of the vessel for the admission of atmospheric air, (which [*hole*] may or may not be provided with a valve opening downwards or so as to allow air to pass into the vessel,) a valve on the outside of the neck opening upwards, and another valve in the neck, and between that last mentioned and the body of the vessel or flask, which latter valve in the neck should open to-

wards the mouth of the neck or bottle. The extremity of the neck is to be placed in the mouth of the patient, and his nostrils stopped or closed in such manner as to cause him to inhale air through the bottle and to exhale it through the neck and out of the valve on the outside of the neck. The air thus breathed, by passing in contact with the sponge, will be charged with the etheric vapors, which will be conveyed by it into the lungs of the patient. This will soon produce the state of insensibility or nervous quiet required.

In order to render the ether agreeable to various persons, we often combine it with one or more essential oils having pleasant perfumes. This may be effected by mixing the ether and essential oil, and washing the mixture in water. The impurities will subside, and the ether, impregnated with the perfume, will rise to the top of the water. We sometimes combine a narcotic preparation, such as opium or morphine, with the ether. This may be done by any ways known to chemists by which a combination of etheric and narcotic vapors may be produced. After a person has been put into the state of insensibility, as above described, a surgical operation may be performed upon him without, so far as repeated experiments have proved, giving to him any apparent or real pain, or so little in comparison to that produced by the usual process of conducting surgical operations as to be scarcely noticeable. There is very nearly, if not entire, absence of all pain. Immediately or soon after the operation is completed, a restoration of the patient to his usual feelings takes place, without, generally speaking, his having been sensible of the performance of the operation.

From the experiments we have made we are led to prefer the vapors of sulphuric ether to those of muriatic or other kind of ether, but any such may be employed which will properly produce the state of insensibility without any injurious consequences to the patient.

We are fully aware that narcotics have been administered to patients undergoing surgical operations, and as we believe always by introducing them into the *stomach*. This we consider in no respect to embody our invention, as we operate through the *lungs and air passages*, and the effects produced upon the patient are entirely or so far different as to render the one of very little, while the other is of immense utility. The consequences of the change are very considerable, as an immense amount of human or animal suffering can be prevented by the application of our discovery.

What we claim as our invention is the hereinbefore described means by which we are enabled to effect the above highly important improvement in surgical operations, viz: by combining therewith the application of ether or the vapor thereof substantially as above specified.

In testimony whereof we have hereto set our signatures, this twenty-seventh day of October, A. D. 1846.

CHARLES T. JACKSON,
WM. T. G. MORTON.

Witnesses—R. H. EDDY,
W. H. LEIGHTON.

UNITED STATES PATENT OFFICE,

To all persons to whom these presents shall come, greeting:

This is to certify, that the annexed is a true copy from the records of this office.

In testimony whereof I, Charles Mason, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this eighteenth day of July, in the year of our Lord one thousand eight hundred and fifty-four, and of the independence of the United States the seventy-ninth.

[SEAL.]

C. MASON.

To all persons to whom these presents shall come:

Whereas I, Charles T. Jackson, of Boston, in the State of Massachusetts, chemist, have, in conjunction with William T. G. Morton, of said city, dentist, invented or discovered a new and useful improvement in surgical operations on animals, whereby we are enabled to accomplish many, if not all, operations, such as are usually attended with more or less pain and suffering, without any, or with very little, pain or muscular action to persons who undergo the same; and whereas the said Morton is desirous of procuring a patent on the same, and as I believe cannot legally do so without my signature to the specification and application; and whereas I am desirous of benefiting him and not to be interested in any patent, I have, therefore, in consideration of one dollar to me in hand paid, the receipt whereof I do hereby acknowledge, assigned, set over, and conveyed, and by these presents do assign, set over, and convey to the said Morton, and his legal representatives, all the right, title, and interest whatever which I possess in the said invention or discovery, a specification of which I have this day signed and executed in conjunction with him for the purpose of enabling him to procure a patent thereon.

And I do hereby request the Commissioner of Patents to issue the said patent to the said Morton, *in his name*, and as my assignee or legal representative to the extent of all my right, title, and interest whatever in the said invention or discovery.

In testimony whereof I have hereto set my signature and affixed my seal, this twenty-seventh day of October, one thousand eight hundred and forty-six.

CHARLES T. JACKSON, [L. S.]

Witness—

R. H. EDDY.

Rec'd and recorded, Nov. 10, 1846.

(Copy.)

WASHINGTON, January 5, 1847.

Dr. W. T. G. MORTON, Boston, Mass.

DEAR SIR: Yours of the 26th ultimo was received in due course of mail, and in answer I have to say, that at the time your application

for preventing pain in surgical operations was under consideration in the Patent Office, Mr. Eddy consulted me on the novelty and patentability of your discovery. I then examined the subject carefully, and gave it as my decided and candid opinion that it was novel and the legitimate object of a patent; and this opinion has only been strengthened by further reflection.

Under the law, any new and useful art is made the subject of a patent. This covers any discovery in modes of procedure having a useful object in view, and susceptible of being so defined as to instruct others to apply or make use of the mode of procedure. There can be no question that your discovery comes under this provision of law. It is a new mode of procedure, definite in its character, and which may be taught to others, and which, therefore, comes under the denomination of an art as defined by the ablest judges in Europe and in this country.

Before your discovery many attempts had been made to render persons insensible to pain preparatory to surgical operations, by introducing in the stomach intoxicating substances; but this mode of procedure was unsuccessful. You then discovered, that by introducing into the lungs the vapors of certain substances, a different effect was produced from that of intoxication produced by the introduction of substances in the stomach, and that this effect was such as to render the patient insensible to pain; hence the use of this discovery, in connection with surgical operations, is an improvement in the art of surgery.

A discovery in the abstract is not the subject of letters patent, as the discovery of the elastic force of steam; of the pressure of the atmosphere; of the expansion of metals under the influence of caloric, &c., for this is the mere finding out of something existing before.

The mere discovery in these cases had no direct useful application in the arts or affairs of life, and could not be appropriated to the sole use of the discoverers; but the moment any one of them could be applied to a useful, practical purpose, then the party so applying it produces a useful result, and such application, originating in the mind of the discoverer or inventor, is no longer a discovery in the abstract of something before existing, but a new creation, which, having its origin in the mind of the discoverer, and not existing before, (for it is an artificial condition,) is, in view of the law, the property of the one who conceived it.

There can be no question that the one who first conceived the idea of intoxicating a patient, preparatory to a surgical operation, would have been entitled to a patent for his new mode of procedure; how, then, does your plan differ from his? You conceived the idea that, by introducing the vapor of certain substances into the lungs, a different condition of the nervous system was produced—viz: a state of insensibility to pain; and by connecting this mode of producing this state of insensibility to pain with surgical operations, you have produced a new and useful result, highly important in the art of surgery, the result of a new conception originating in your mind and legitimately the subject

of letters patent. Your invention is the connection of the two processes or modes of operation.

Before the date of Watts's invention of the steam engine, the expansive force of steam had been applied to a piston in a cylinder, and it was well known, that by the application of cold water steam could be condensed in a vessel to effect a vacuum; and all that immortalized that great man was the union of these two ideas or modes of procedure, applying the force of steam in one vessel and condensing it in another. In a legal point of view your invention does not differ from this, which has been admitted to be patentable by all the legal knowledge of the world, and the universal consent of civilized man.

I am, sir, yours,

Very respectfully,

(Signed)

CHS. M. KELIER,
For KELIER & GREENOUGH.

I concur in the foregoing opinion entirely, entertaining no doubt that Dr. Morton's discovery is a new and useful art, and as such the proper subject of a patent.

DANIEL WEBSTER.

Feb. 13th, 1847.

I have examined the question of the patentability of Dr. Morton's discovery of the anæsthetic properties of ether, and its applicability to surgical operations, and entertain no doubt as to the validity of the patent, or of his exclusive title thereto.

January, 1852.

J. M. CARLISLE, *Washington.*

BOSTON, *May 17, 1854.*

Having long since carefully considered this question, I do not hesitate to concur in the opinion expressed by Mr. Webster.

GEO. T. CURTIS.

BOSTON, *May 12th, 1854.*

The discovery of the anæsthetic properties of the vapor of ether, and the practical application thereof for the production of insensibility to pain during the performance of surgical operations upon the human body, as described in the letters patent of the United States to Dr. Wm. T. G. Morton, are, in my opinion, the proper subject matter of a patent.

WILLIAM WHITING.

BOSTON, *May 17, 1854.*

I concur entire in the opinion expressed by Mr. Webster, Mr. Curtis, and Mr. Whiting, and in the conclusions of the argument in Messrs. Keller & Greenough.

R. CHOATE.